AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS

1. Cancelled.

2. Cancelled.

3. Cancelled.

4. Cancelled.

5. Cancelled.

6. Cancelled.

7. **(Currently Amended)** A method as claimed in claim ~~6~~ 9 wherein the step of encoding comprises steps of:

generating a respective scrambling pattern for each of the transmitters so that different scrambling patterns are generated for transmitters for neighboring optical channels; and

applying the respective scrambling patterns to respective data signals to be transmitted over the respective neighboring optical channels.

8. **(Original)** A method as claimed in claim 7 wherein the step of applying the respective scrambling patterns comprises steps of, at each transmitter:

aligning bits of the scrambling pattern with bits of the data signals with reference to a predefined starting point in the scrambling pattern; and

applying a reversible Boolean operation to the aligned bits, to generate an encoded data signal.

9. **(Currently Amended)** ~~A method as claimed in claim 6 wherein the step of generating a respective scrambling pattern for each of the transmitters comprises steps of:~~ A method of generating a wave division multiplexed (WDM) optical signal in order to reduce non-linear signal degradation effects on neighboring optical channels, comprising:

receiving respective data signals at each of a plurality of transmitters for transmitting a respective one of optical waveforms conveyed over the neighboring optical channels to a multiplexer for generating the optical signal;

encoding each of the data signals using a respective encoding scheme selected to reduce data correlation on neighboring optical channels by generating a pseudo-random bit sequence; and extracting from the pseudo-random bit sequence, in accordance with a predefined algorithm, a scrambling pattern for each of the neighboring optical channels, so that the extracted scrambling patterns are substantially de-correlated at any given offset.; and

transmitting the encoded data signals to the multiplexer.

10. **(Original)** A method as claimed in claim 9 wherein the step of extracting comprises a step of removing segments from the pseudo-random bit sequence, each of the segments being used as a respective scrambling pattern.

11. **(Currently Amended)** A method as claimed in claim ~~6~~ 9 further comprising a step of selecting a decoding scheme to apply to data received on the neighboring optical channels.

12. **(Original)** A method as claimed in claim 11 wherein the step of selecting comprises reading a hardware configuration setting in a decoder circuit of a receiver for the optical channel.

13. **(Original)** A method as claimed in claim 11 wherein the step of selecting comprises a step of reading a memory that stores a decoding scheme received in a message when the optical channel was commissioned.

14. **(Original)** A method as claimed in claim 11 wherein the step of selecting comprises a step of searching through a predefined set of decoding schemes adopted to decode data received on the optical channel.

15. **(Original)** A method as claimed in claim 14 wherein the step of performing a search procedure comprises at least one iteration of the steps:

selecting a decoding scheme;

applying the selected decoding scheme to at least a part of the data;

calculating a bit error rate for the decoded data; and

determining if the bit error rate is below a predetermined threshold.

16. Cancelled.

17. Cancelled.

18. Cancelled.

19. Cancelled.

20. Cancelled.

21. Cancelled.

22. Cancelled.

23. **(Currently Amended)** ~~A system as claimed in claim 21 wherein each respective transmitter is further~~ A system for generating a wave division multiplexed (WDM) optical signal, comprising:

an optical transmitter for generating a respective optical waveform for each channel in the WDM optical signal;

a multiplexer connected to the optical transmitters, the multiplexer being adapted to multiplex the respective optical waveforms into the WDM optical signal; and

a scrambler for each respective transmitter, the scrambler being adapted to apply a respective scrambling pattern to a data signal to be transmitted by a respective transmitter and further adapted to extract a respective scrambling pattern from a pseudo-random bit sequence, ~~and~~ wherein each scrambling pattern is extracted so that scrambling patterns for the neighboring channels are substantially de-correlated in any alignment.

24. Cancelled.

25. Cancelled.

26. (New) The system as claimed in claim 23 further comprising a receiver that includes a descrambler that selects a decoding scheme to apply to data received on the optical channels.

27. (New) The system as claimed in claim 26 wherein the descrambler comprises a decoder circuit having a hardware configuration setting that provides the decoding scheme to apply to data received.

28. (New) The system as claimed in claim 26 wherein the descrambler comprises a memory that stores a decoding scheme received in a message when the optical channel was commissioned.

29. (New) The system as claimed in claim 26 wherein the receiver comprises a memory that stores a predefined set of decoding schemes adapted to decode data received on the optical channel and the set of decoding schemes is searched to select the decoding scheme to apply to the data received.

30. (New) The system as claimed in claim 29 wherein the descrambler searches the decoding schemes by applying a selected one of the decoding schemes to at least a part of the data; calculating a bit error rate for the decoded data; and determining whether the bit error rate is below a predetermined threshold.

31. (New) The system as claimed in claim 26 wherein the descrambler aligns bits of a decoding pattern with bits of the data received with reference to a predefined starting

point in the descrambling pattern, and applies a reversible Boolean operation to the aligned bits, to generate a decoded data signal.